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THE AGRICULTURE OF SICILY

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THE AGRICULTURE OF SICILY . . . . .

By Victor B. Sullam*

The war-battered, beautiful island of Sicily has long been known as Italy's most pressing economic problem. With over 90 percent of the land under agricultural exploitation and almost half of its population engaged in agricultural pursuits, Sicily seldom produces enough food for its own inhabitants. With a strange combination of dry-farmed wheatland and irrigated orchards and gardens, with a surplus of citrus fruit and vegetables and a deficit of staple foodstuffs, with its thickly populated shores and deserted inland countryside, with its minuscule fruit- and vegetable-growing holdings and the grain-growing relics of feudal domains, Sicily provides the occupying forces with a most unique set of social and economic problems.

To the reader of classical and modern literature, to the traveler who remembers the luxuriant gardens and orchards of the Sicilian coast, the island of Sicily must appear endowed not only with great natural beauties and glorious monuments of ages past but also with much agricultural wealth.

To the students of social and economic questions, Sicily has long been known as Italy's outstanding economic problem. The objectionable patterns of land tenure and rural settlement, the dependence upon a few cash crops, the predominance of disadvantaged groups among the rural and urban population are all features to which Sicily owes as much renown as to its Greek temples or to its citrus blossoms. This apparent paradox of bountiful land and low standards of living, of blessed climes and destitute people, obviously needs explanation. Granted that no quick-healing nostrum may be found for all the social and economic evils of Sicily, it still seems evident that if the island is to be under Allied administration for any considerable length of time, its agricultural economy should be carefully studied. In this report may be found some of the answers to the manifold questions that are usually asked in connection with the agriculture of the ancient Trinacria.

PHYSIOGRAPHIC FEATURES

The climate of Sicily is essentially Mediterranean, with warm summers, cool winters, and an irregular distribution of rainfall. Of the three main watersheds of Sicily, those facing the Tyrrhenian Sea have the greatest precipitation, averaging 903 millimeters (35.6 inches) in 1933-38; the minimum precipitation is found on the Mediterranean side, with an average rainfall of 696 millimeters (27.4 inches). On the whole, rainfall differs but slightly from that of the lower part of the Po Basin, which is known to be one of Italy's most prosperous regions, but summer precipitation on the average is exceptionally low, ranging from 56.7 millimeters (2.2 inches) on the Tyrrhenian Sea to 30.8 millimeters (12.1 inches) on the Mediterranean side. Precipitation varies greatly from year to year. The eastern rainfall averaged 785 millimeters (30.9 inches) in 1933-38, as compared with 443.7 millimeters (17.5 inches) in 1937 and 845.5 millimeters (33.3 inches) in 1938.

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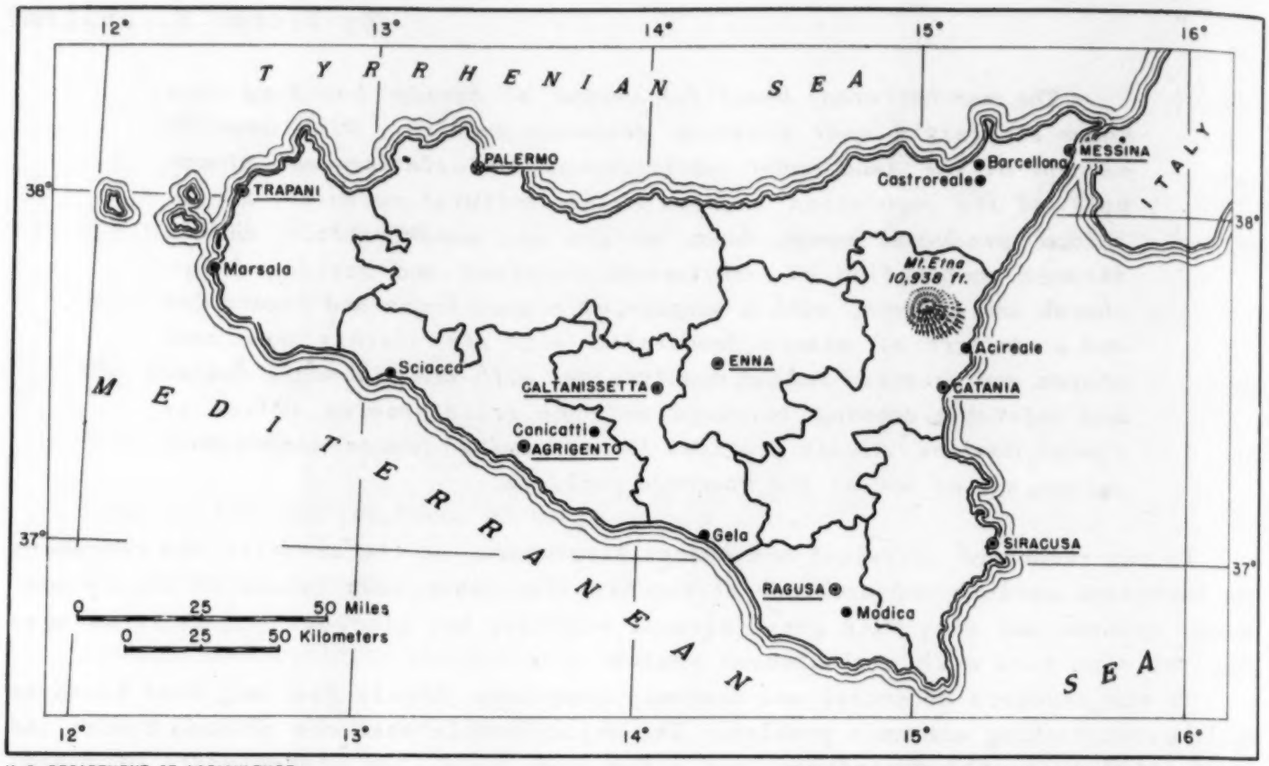

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FIGURE 1.—Map of Sicily.

Rainfall begins in September and ends in May or at the beginning of June, with the greatest precipitation in January, September, and December. It is the distribution, rather than the total amount, of rainfall that gives United States dry-farming regions an advantage over Sicily. In areas like South Dakota precipitation reaches a peak around June-July, but in Sicily these are often rainless months.

Little relief against the dry summers can be found in irrigation. Natural reservoirs are lacking, and the water table is soon lost in the clay strata. Recent estimates of the area under irrigation indicate that a total of no more than 100,000 hectares (247,100 acres) secures relief from summer droughts.

Available information on Sicilian soils is neither complete nor fully satisfactory. The volcanic soils of the Etna region and the alluvia of the Catania, Lentini, and Terranova plains are those best suited for agricultural exploitation. The mountain soils compare favorably with those of other Italian regions. *Terra rossa* soils occupy large areas in the northern and central parts of the island. Italian authors also speak of black soils (*terra nera*) and red-black soils (*terra rosso-nera*). Since to prove that true Chernozem exists in Sicily is difficult, one is led to believe that the black soils of Sicily may fall in the Rendzina group.

THE PEOPLE

Agriculture is Sicily's main industry, with 49.8 percent of the gainfully employed engaged in agricultural pursuits and the processing of agricultural commodities

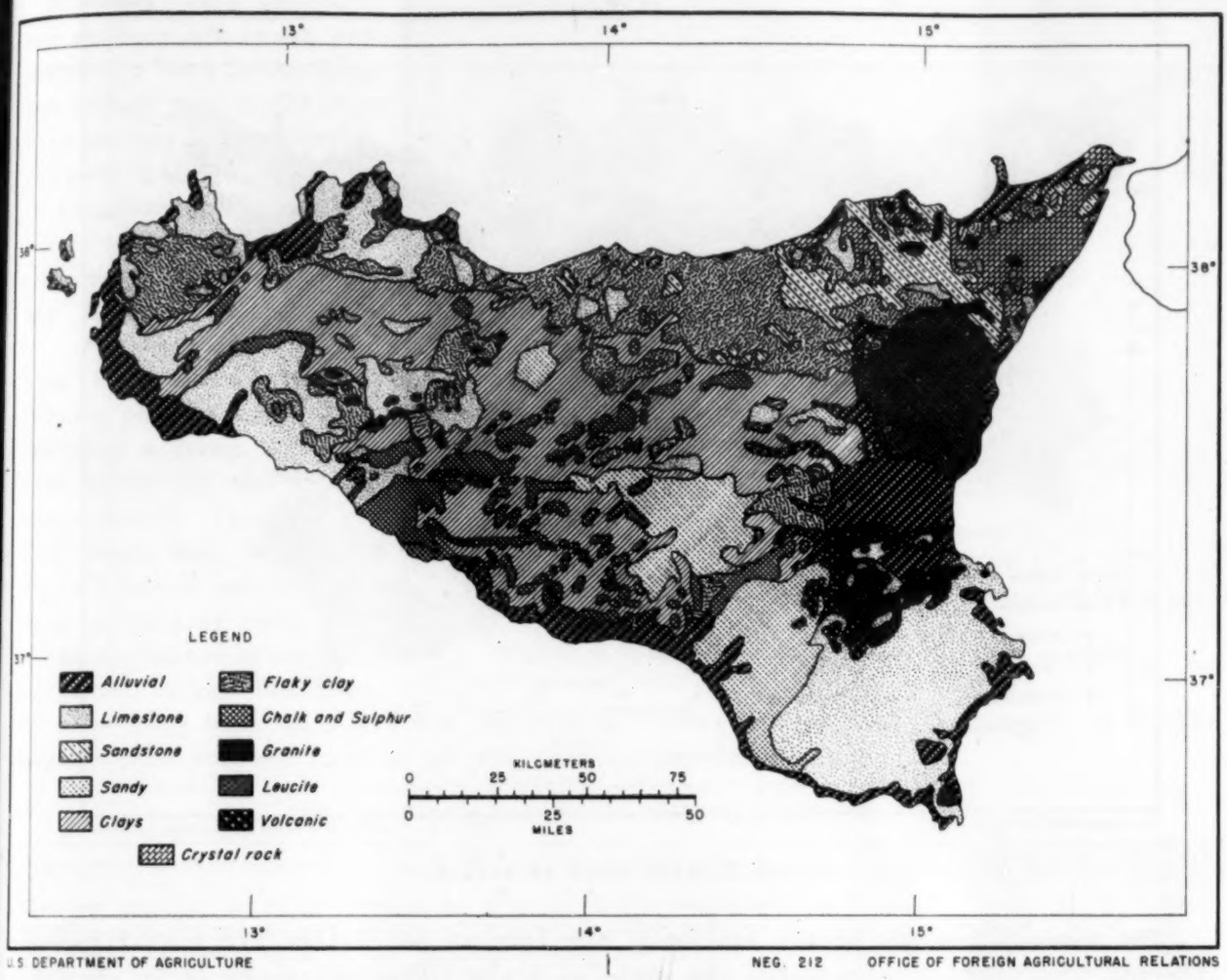

FIGURE 2.—Types of soil of Sicily.

constituting an important source of employment and income. Thus farming is somewhat more important in Sicily than in Italy as a whole.[1]

[1] Whereas the United States census classifies population on the basis of residence, Italian statistics are essentially occupational in nature. Obviously any attempt to classify the Italian population on the basis of size of population centers would be ill-advised in a country like Italy where a community of 100,000 people may present rural traits in the south and in the north a town of 10,000 inhabitants may be essentially urban. Consequently Italian population statistics classify only the "active population" (all people over 10 years of age) according to the main source of income. Data are thus available for the "gainfully employed" engaged in agriculture, hunting and fishing, industries, etc.

Population centers are also classified on the basis of the percentage of those gainfully engaged in agricultural pursuits. "Rural communes" are those in which 50 percent or more of the gainfully employed have farming as their main source of income. It follows that such terms as rural population or farm population cannot be used in connection with Italian statistics. Hence the need for a new designation of the "gainfully employed engaged in farming" for which the term of *farming population* will henceforth be used.

One cannot fail to see how arbitrary and unwarranted are the conclusions drawn by many sociologists with regard to mental traits, folkways, and mores of the "rural population" in Italy. Large portions of this population group are rural in occupation but not in residence. From an economic standpoint the "farming population" may well be compared with the farm groups of the United States. From a sociological standpoint, however, one wonders whether the way of life that obtains in large centers of over 30,000 people is really comparable with that of isolated farmsteads or small country villages.

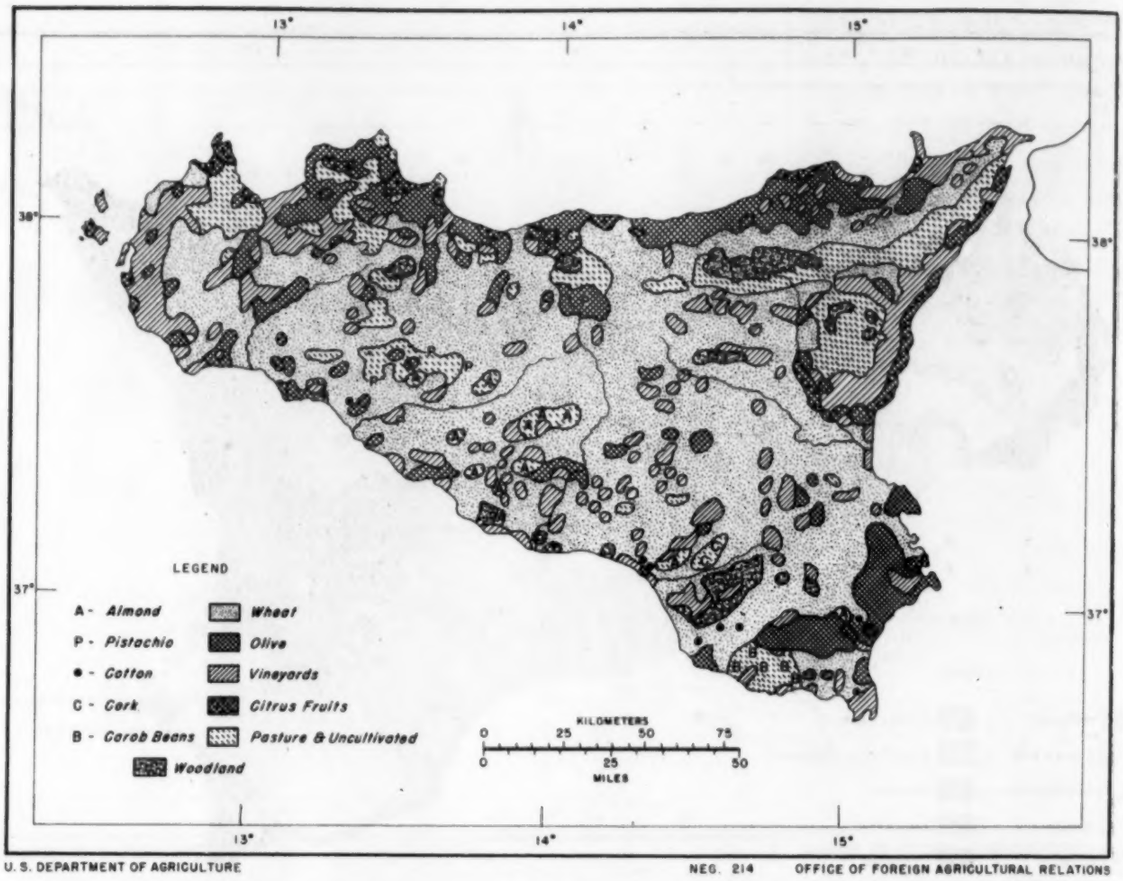

FIGURE 3.—Main crops of Sicily.

The composition and tenure status of the farming population are significantly different from those obtaining for the whole of Italy. Farm operators in Sicily represent only 40.8 percent of the farming population, and farm laborers are of almost equal importance (38.6 percent). These data already reveal the first great difference between Sicily and Italy. Whereas in the Kingdom as a whole the number of operators has since 1911 surpassed that of farm laborers, such a development has not occurred in Sicily to any significant extent.

The phenomenon appears more evident when consideration is given to the third group of rural people, namely, the share operators (*coloni parziari*). These constitute 17.3 percent of the rural population of Sicily and 20.4 of the rural population of the Kingdom; but, although for Italy as a whole the share operators are mostly independent entrepreneurs (that is, share tenants), the Sicilian share operator has only precarious, unstable connections with the land. In legal parlance the share operators of Italy are *locatores rerum* (lessors of things), whereas the Sicilian share cultivators are mere objects of a contract of *locatio operis* (renting of service). In other words, whereas the share operator of other Italian regions is essentially comparable to the share tenant of the Middle West, the share cultivator of Sicily closely resembles the sharecropper of the southern United States.

If then one considers the share tenants as entrepreneurs and the share cultivators as laborers, farm operators are found to comprise 72.8 percent of the farming population of Italy, whereas farm laborers include 58.1 of the rural people of Sicily.

Among farm laborers, day workers are in net predominance both in the Kingdom and in Sicily (78.2 and 91.4 percent, respectively). But once again this typically disadvantaged group far exceeds in Sicily the proportion that obtains for the Kingdom as a whole.

Furthermore, it has long been known that the farming population of Italy includes a group of part-time operators who receive supplemental income from farm wages and, because of their limited mobility and weak bargaining power, are often exploited by the managers of larger holdings, to whom they have to apply for employment. This group, too, represents in Sicily a higher-than-average portion of the farming population.

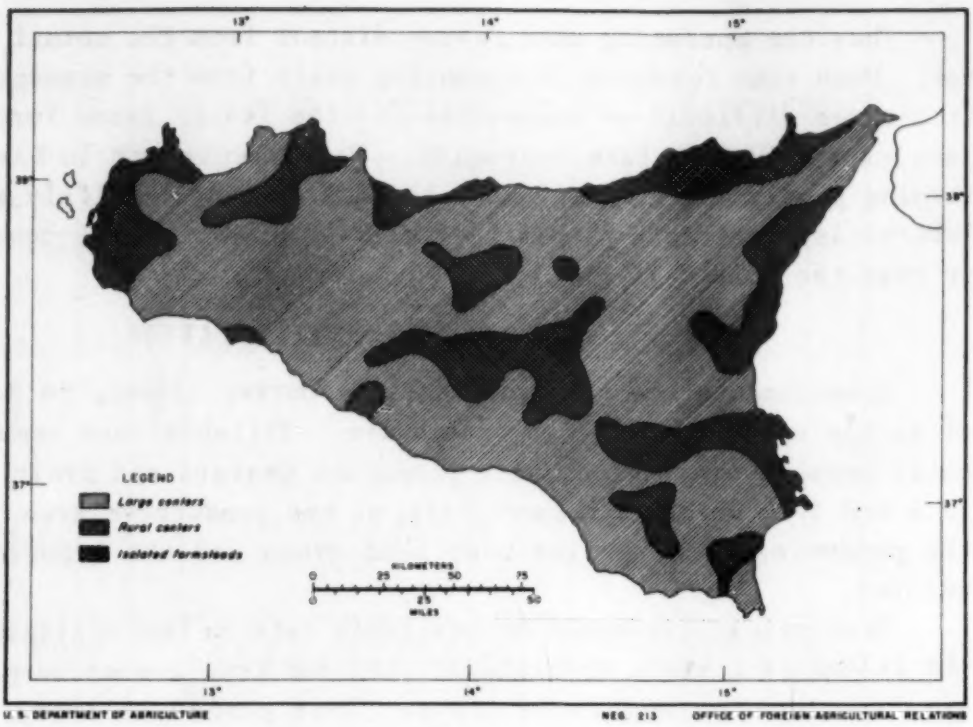

FIGURE 4.—Pattern of rural settlement in Sicily.

TABLE 1.—*Sicily and Italy: Farming population, 1936*

ITEM	SICILY	ALL ITALY
	Percent	*Percent*
Farming population as percentage of the gainfully employed	49.8	47.7
Farming population as percentage of the population present	16.9	20.6
Operators as percentage of the farming population	40.8	51.4
Laborers as percentage of the farming population	38.65	25.1
Share-operators as percentage of the farming population	17.3	20.4
Farm entrepreneurs	40.8	71.8
Farm laborers	55.95	25.1
Women engaged in agricultural pursuits	8.0	42.1

Based on the Census of April 21, 1936.

TABLE 2.—*Sicily and Italy: Pattern of settlement, 1936*

ITEM	SICILY	ALL ITALY
	Percent	*Percent*
Percentages of population living in centers	90.0	73.8
Percentages of population living in isolated farmsteads	10.0	26.2
"Rural" communes, percentage of the total[1] number	89.2	78.1
"Rural" communes, percentage of the total population	66.0	55.3

[1] "Rural" communes are those having 50 percent or more of the gainfully employed engaged in agricultural pursuits.

Based on the Census of April 21, 1936.

Much economic and social significance is also to be attached to the pattern of rural settlement. In Northern and Central Italy as well as in Abruzzi, farmsteads are scattered over the countryside or are so located that the operator resides on the holding or in the immediate neighborhood. Conversely, in the whole of Sicily most of the population lives in large centers (rural cities) or in sizable suburban villages, with isolated farmsteads confined to a small section of the Province of Messina.

Thus the operating unit is very distant from the normal residence of the cultivator. Much time is wasted in commuting daily from the peasant's home to the fields, and it becomes difficult or impossible for the lesser labor force (women and children) to participate in the farm operation. Women represent in Sicily but 8 percent of the farming population as compared with 42.1 percent for Italy as a whole. "In Sicily the laborer is rural, the laborer's family is urban. Rural centers are the exception rather than the rule." (*1*) [2]

LAND UTILIZATION

According to the revised Cadastral Survey (1938), 94.9 percent of the total area of Sicily was classified as productive. Tillable land constituted 61 percent of the total area in production, with permanent pasture and fruit and wine groves occupying 12.6 and 19.9 percent, respectively, of the productive area. Already from these data, the predominance of grains over feed crops and the importance of tree crops appear evident.

Statistical treatment of available data on land utilization also reveals that for the island as a whole specialized vine and tree groves surpass in importance the cultivation of tree and field crops. Thus grapes, olives, and deciduous and citrus fruits, which elsewhere in Italy are an element of diversification of the farm enterprise, in Sicily are cash crops of specialized farms.

TABLE 3.—*Sicily: Land utilization, 1938*

CLASSIFICATION	AREA		LAND USES AS PERCENTAGE OF TOTAL AREA OF AGRICULTURAL AND FOREST LANDS
	Hectares	*Acres*	*Percent*
Tillable land	1,483,346	3,665,348	61.0
Meadows	760	1,878	-
Pastures	307,726	760,391	12.6
Orchards	484,203	1,196,466	19.9
Woodlands	86,935	214,816	3.6
Productive but uncultivated	70,175	173,402	2.9
Total agricultural and forest lands	2,433,145	6,012,301	100.0
Unproductive lands	137,941	340,852	
Total area	2,571,086	6,353,153	

Compiled from official sources.

TABLE 4.—*Sicily and Italy: Annual requirements for agricultural labor, 1936*

CLASSIFICATION OF FARM LAND	MAN-HOURS		PROPORTION OF TOTAL REQUIREMENTS	
	SICILY	ITALY	SICILY	ITALY
	Millions	*Millions*	*Percent*	*Percent*
Plowed land	301	2,025	27.7	26.7
Plowed land with vines and trees	80	1,988	7.3	26.2
Meadows and pasture	29	763	2.6	10.0
Orchards	674	2,590	62.0	34.1
Woods and forests	3	223	0.4	3.0
Total	1,087	7,589	100.0	100.0

Compiled from official sources.

The high proportion of land in production merely indicates that exploitation of natural resources has reached the point where much marginal land is under cultivation, whereas the small area in permanent meadows is a limiting factor in the expansion of livestock enterprises.

[2] Italic numbers in parentheses refer to Literature Cited, page 240.

TABLE 5.–*Principal crops of Sicily by Provinces, average 1934-38*

PROVINCE	WHEAT				EARLY POTATOES[1]				COMMON POTATOES[1]			
	AREA		PRODUCTION		AREA		PRODUCTION		AREA		PRODUCTION	
	1,000 hectares	*1,000 acres*	*1,000 quintals*	*1,000 bushels*	*1,000 hectares*	*1,000 acres*	*1,000 quintals*	*1,000 bushels*	*1,000 hectares*	*1,000 acres*	*1,000 quintals*	*1,000 bushels*
Agrigento	127	314	1,595	5,860	(2)	(2)	10	38	(2)	1	19	71
Caltanissetta	76	188	1,064	3,909	(2)	(2)	4	13	(2)	(2)	4	13
Catania	86	212	797	2,928	2	6	281	1,033	(2)	(2)	5	19
Enna	95	235	1,242	4,564	(2)	(2)	4	13	(2)	(2)	3	11
Messina	47	116	433	1,591	(2)	(2)	1	4	1	3	32	117
Palermo	160	395	1,715	6,301	(2)	(2)	9	35	(2)	1	27	98
Ragusa	45	111	354	1,301	-	-	-	-	(2)	(2)	1	5
Syracuse	74	183	689	2,532	(2)	1	21	76	(2)	1	33	122
Trapani	84	208	935	3,436	(2)	(2)	5	17	(2)	(2)	10	36
Total	794	1,962	8,824	32,422	2	7	335	1,229	1	6	134	492

	ORANGES				LEMONS				TANGERINES			
				1,000 pounds				*1,000 pounds*				*1,000 pounds*
Agrigento	-	-	87	190	-	-	34	7,496	-	-	20	4,409
Caltanissetta	-	-	12	2,646	-	-	2	441	-	-	-	-
Catania	-	-	646	142,417	-	-	919	202,603	-	-	82	18,078
Enna	-	-	236	52,028	-	-	-	-	-	-	-	-
Messina	-	-	141	31,085	-	-	1,008	222,224	-	-	9	1,984
Palermo	-	-	140	30,864	-	-	521	114,860	-	-	237	52,249
Ragusa	-	-	18	3,968	-	-	23	5,070	-	-	1	220
Syracuse	-	-	566	124,780	-	-	575	126,764	-	-	32	7,055
Trapani	-	-	44	9,700	-	-	14	3,086	-	-	1	220
Total	-	-	1,890	397,678	-	-	3,096	682,544	-	-	382	84,215

	HORSE BEANS (DRIED)				GRAPES (TABLE AND WINE)				OLIVES (OIL)[1]			
Agrigento	71	175	709	156,306	-	-	38	8,377	-	-	33	7,312
Caltanissetta	50	124	481	106,041	-	-	8	1,763	-	-	16	3,499
Catania	36	89	304	67,020	-	-	47	10,361	-	-	16	3,478
Enna	32	79	297	65,477	-	-	5	1,102	-	-	12	2,737
Messina	4	10	31	6,834	-	-	66	14,650	-	-	53	11,760
Palermo	30	74	257	56,658	-	-	27	5,953	-	-	15	3,314
Ragusa	15	37	159	35,053	-	-	52	11,464	-	-	15	3,255
Syracuse	6	15	49	10,803	-	-	11	2,425	-	-	14	3,079
Trapani	13	32	147	32,408	-	-	168	37,037	-	-	25	5,509
Total	257	635	2,434	536,600	-	-	422	93,132	-	-	199	43,943

[1] Averages for 1936-38.

[2] Less than 500.

Compiled from official sources.

Further to emphasize the difference in the role of farm enterprises in the Sicilian economy as compared with the economy of Italy as a whole, labor requirements by type of land use have been calculated from official statistics (see table 4).

Over 60 percent of the total supply of agricultural labor is absorbed by orchards; namely, by enterprises that are risky and uncertain. For Italy as a whole, on the other hand, labor requirements are distributed among the three main classes of land use with some degree of uniformity.

TYPES OF FARMING AND FORMS OF LAND TENURE

Official sources divide the whole of Italy in small areas (*zone agrarie*) defined (*4*) as "groups of communes which have similar natural and agricultural conditions."

These areas, which resemble our "type-of-farming areas," are not necessarily uniform but differ significantly from surrounding communes. The agricultural zones are then grouped into three agricultural regions (mountains, hills, and plains) more on the basis of topography than according to altitude (*5*).

The diversification of Italian agriculture is clearly evinced by the large number of agricultural areas (796) and by the variations that are found between neighboring areas. Sicily, with 8.5 of the agricultural land of Italy, includes less than 7 percent of all the agricultural areas. Obviously even an attempt to describe the 54 agricultural areas of the island would be a Herculean task; hence the need for a more generalized (and, at the same time, less precise) treatment.

On the basis of significant aspects of the agricultural pattern Sicily may be divided into two main economic regions: The extensively farmed holdings of the central plateaus and of the southern coast and the intensive enterprises of the coastal fringe and of the slopes of Mount Etna. With some generalization one could say that intensive farming occupies a belt on the coastal fringe west of Sciacca and east of Gela, whereas extensive farming stretches from the northern plateaus to the Mediterranean shore, including a total area of one million hectares (2,471, 000 acres).

The region of extensive farming is characterized by a unique pattern of land tenure and settlement, based on large, extensively farmed holdings referred to as latifundia (*latifondi*). Although this term is often used to designate any sort of large holdings both in Sicily and in other parts of Italy, the typical features of the latifundistic economy accrue from factors other than the mere pattern of land ownership. True latifundia exist only in Sicily, where, on the other hand, the term is seldom used, most large estates being referred to as *feudi* (feudal domains).[3]

The latifundia are large or very large holdings (over 500 hectares or 1,200 acres) where farm buildings provide shelter for a very small portion of the labor force (the caretaker and a few permanent laborers). Facilities for the processing of agricultural commodities and storage space for the crops and farm supplies are scarce. There is little or no permanent shelter for the livestock. The latifundia are still held in ownership by the Sicilian gentry and are farmed out to managers known as *gabellotti* for a consideration in cash or kind (wheat, olive oil, and cotton).

The *gabellotti* are mere middlemen between the landowners and the labor force. Elsewhere in Italy capitalistic renters contribute management and operating capital (cash, machinery, livestock, fertilizer). The whole economy of the irrigated plains of Lombardy and Piedmont is based on the contribution of capitalistic renters, able

[3] "The *latifundium* is the former feudal domain: more precisely it is the feudal estate that still exists from an economic standpoint, one century after it has been disposed of by law." (See *9*, p. 1.)

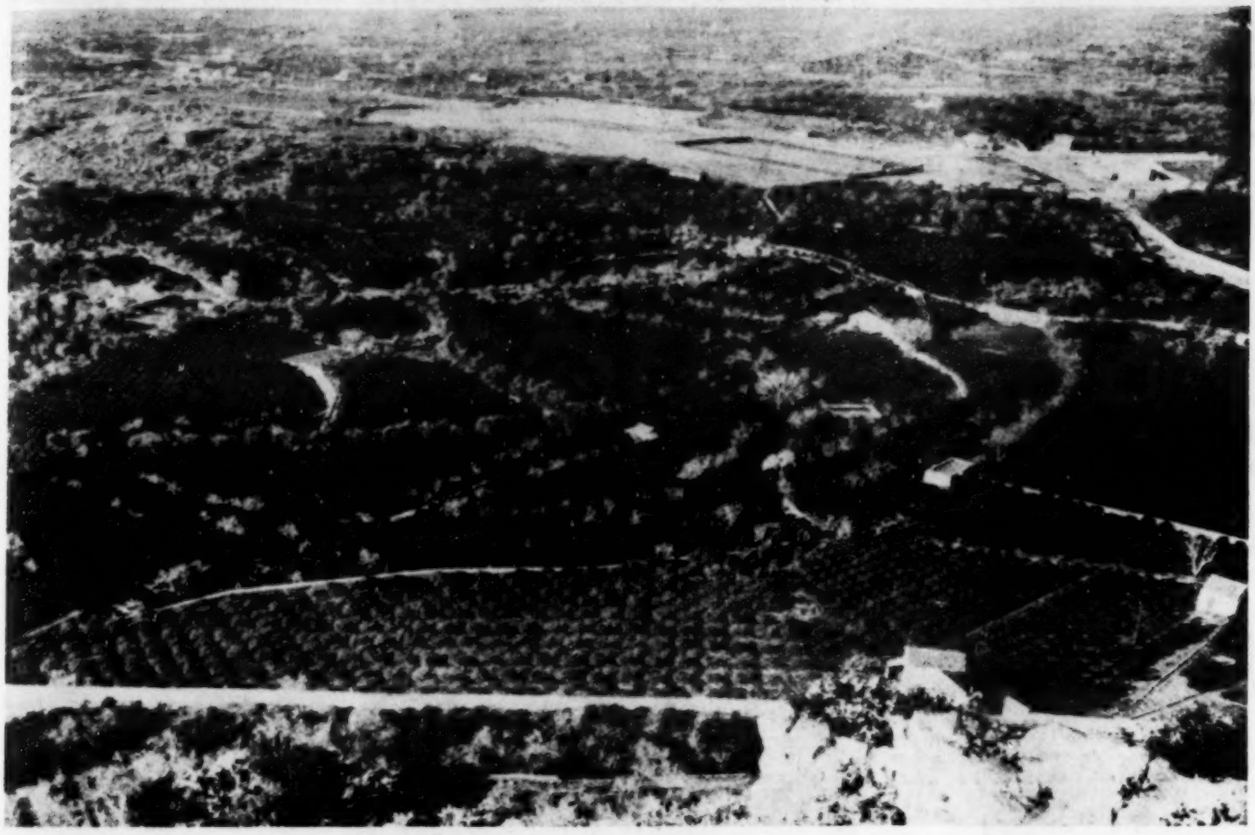

FIGURE 5.—Citrus groves in Sicily.

and progressive managers, whose input of operating capital is of utmost importance. The *gabellotto*, on the other hand, merely relieves the landlord of the burden of management and assumes the entrepreneurial risks. While the Lombard renter operates the estate as a large-sized, highly efficient unit, the *gabellotto* subdivides the holding into smaller units, subleases some of them for cash or for shares of the crop (contracts of *metateria, terratico, partitanza*), with hired labor. The Lombard renter improves the land and, through high efficiency of operation, ensures labor fairly adequate returns. The *gabellotto* exploits both human and natural resources.

The latifundistic enterprise obtains its labor from the neighboring rural centers. The peasant earns his livelihood from part-time operation of his own holding and is forced to seek supplementary employment on the *latifondo*. Hence a vicious circle results: The *gabellotto* has the monopoly of land and is able to offer exceedingly low wages; the peasant has little or no bargaining power and in his attempts to achieve economic independence merely worsens his position. If a floor is placed under wages, fewer workers are hired and more land is assigned to sharecroppers at equally hard conditions. Some land is also sold on credit to peasants, merely to revert to the *latifondo* when poor crops and heavy taxes make the mortgagee default his payments.

The evils of the latifundistic economy are not the result merely of the existence of large holdings, nor would mere changes in the pattern of land ownership bring about significant improvements. Land reform in Sicily involves resettlement, that is, building of farmsteads, of aqueducts, of roads. Radical shifts in farm production

may be needed, as well as arrangements for cooperative credit, marketing, and purchasing of farm commodities.

Prior to the advent of Fascism, the political education of the Sicilian peasants was rapidly progressing. Time and again the rural people banded in cooperatives to rent land directly from the landlords. Due to the gregarious tendencies of the average Sicilian and his loyalty to associations, these landholding cooperatives were most successful. After 1922 they were overtly opposed by the Regime so that, in 1938, while still maintaining a total membership of 17,000 individuals, landholding cooperatives operated only 13,000 hectares (32,123 acres).

The farm enterprises which obtain under the latifundistic system are extremely simple. The classical rotation is a bean-wheat-fallow-wheat rotation; more progressive entrepreneurs open the rotation with horse beans, plowing the soil with tractors and applying abundant fertilizer. The beans are followed by wheat and (in the third year) by *sulla* (*Hedysarum coronarium*) a hardy legume that thrives in poor basic soils. In the fourth year *sulla* is plowed under, and wheat is planted for the second time. Most of the wheat is of the durum type, used both for pastes and bread.

Toward the Mediterranean shore, cotton (of the Upland varieties, both from native and from Acala seed) takes the place of the horse beans in the rotation. Since cotton receives careful cultivation and abundant application of organic fertilizer, it affects the following wheat crop in the most favorable way.

On the whole Sicily plants in wheat 32.5 percent of its agricultural area, that is, almost twice the normal proportion for the Kingdom (17.8 percent). Nowhere in the latifundia does the area in wheat fall below 20 percent of the total agricultural land. Conversely, yields in Sicily are well below the average for the Kingdom, or for any major division of the peninsula.

On most Italian farms, vine and tree crops are a means both toward diversification and toward stabilization of seasonal labor requirements. But in the latifundia perennial crops have little importance and are inadequately cared for. Once olive and nut trees are planted or grafted, no attempt is made to regulate their development or increase their productivity. Significantly enough, while the labor requirements of one hectare (2.471 acres) of olive trees are estimated at 950 hours in Tuscany, they do not exceed 500 hours in Sicily.

Livestock raising is also of secondary importance. Mules and bullocks are used as draft animals, and donkeys are employed for personal conveyance, as pack animals, and as power for the olive presses and small grain mills. Large flocks of sheep and, in the Province of Messina, of goats roam the fallows.

The small holdings by which the peasants have achieved their dream of landownership surround the latifundia. There a greater diversification is achieved. Fruit trees, prickly pears, and vegetables occupy much of the land, but once again it is wheat that constitutes the main farm enterprise. The animal enterprises include a few head of swine and sizable flocks of poultry; hence the paradox that Sicilian peasants, whose consumption levels are among the lowest in Italy, outrank even some of the urban groups in their consumption of poultry products.

The transition from the latifundia to the diversified orchards and truck gardens of the coastal fringe and the slopes of Mount Etna is most abrupt. This is particularly evident in the Province of Catania. As one moves from the upper to the lower slopes of the mountains, one finds that, whereas at higher altitudes wheat occupied one-half the land in cultivation, on the lower slopes wheat disappears entirely from the farms - a phenomenon that is extremely rare elsewhere in Italy.

The region of intensive farming presents a combination of small holdings (citrus grape, and truck farms) and large specialized farms for the production of citrus fruits, especially tangerines.

All the enterprises of the coastal fringe present special features and, for this reason, shall be considered in detail hereinafter.

Citrus production in Sicily is based upon three fundamental requirements: Water for irrigation, terracing and leveling of the soil, and adequate techniques. Once the water is ensured (from rivers, from the water table, from wells, and from reservoirs) citrus fruits are planted with little consideration as to the nature of soil, the topography, or previously existing annual or perennial crops.[4]

The soil is prepared in the summer, or in the early fall, by breaking the ground with plow and spade to a depth of 50 centimeters (20 inches). Stones are set aside for the formation of walls, and rocks are broken to build farm roads (locally known as *rasole*). Young plants obtained from the nurseries of the Province of Messina are carefully planted, with hedges of cactus and eucalyptus being used as windbreaks.

The standard stock for all citrus fruits is the bitter orange (*Citrus bigaradia* L.), and the nurseries *per se* constitute an important industry, especially in the communes of Mazzarra S. Andrea, Castroreale, Furnari, and Tripi. Total production per annum of the nurseries is estimated at 1,600,000 plants of which 1,000,000 are bitters, 300,000 orange on bitter, 24,000 lemon on bitter, 250,000 tangerine on bitter, etc.

Bitter seeds are obtained from the processing plants of nearby Barcellona, where oranges for marmalade and essential oils are produced. Stocks are budded at 3 to 4 years of age, either from April to June or from September to October. Budded stocks are removed from 12 to 24 months after grafting.

Other than planting operations, the securing of water requires the greatest care. Water requirements are high, and the construction of canals, aqueducts, etc., is most expensive. On the whole and barring the production of forced lemons, the following are normal water requirements per hectare (2.471 acres) of citrus groves between the first of May and the end of October:

	Liters per second	*Gallons per second*	*Cubic meters per hectare*	*Cubic feet per acre*
Northern shore	.40	.11	6,200	88,608
Western shore	.55	.15	8,500	121,479
Eastern shore	.56	.15	7,980	114,047

The forced (summer) lemons or *verdelli* represent about one-tenth of the total production and are produced mostly in the Provinces of Messina (50 percent), Palermo (30 percent), Catania (18 percent), and Syracuse (2 percent). The plants are grown in permeable, shallow soil. At the beginning of July the roots are exposed to the air by digging around the tree, and all irrigation is interrupted until the second week of August. Then the roots are covered again, and the tree receives both nitrogenous fertilizer and irrigation. Each tree receives from 5 to 6 hectoliters (132 to 158.5 gallons) of water immediately after the roots are covered. Three or 4 days later a second irrigation (called *controbevera*) is practiced, consuming the same amount of water. Soon the tree is again in blossom, and fruits ripen from May to September of the next year.

Sicilian oranges are of the Valencia type and belong to numerous varieties. Important are also the blood oranges (*arance sanguigne* and *doppio sanguigne*).

[4] In recent years a dry rot, *mal secco*, wrought much damage to the citrus groves.

Tangerine production is essentially a large-scale enterprise of the Provinces of Palermo, Catania, and Syracuse. Tangerines receive abundant applications of fertilizer, including potassium sulfate.

The industrial processing of citrus fruit, which was a great source of wealth for the whole island, has lost in recent years much of its importance, because the organization that controls production and marketing of citrus fruit (the *Camera Agrumaria* of Messina) granted to Sicilian concerns the monopoly of raw materials. Consequently, the production of synthetic citric acid developed abroad and wrought havoc to the Sicilian enterprises. Before the war the great producers of citric acid of Sicily had to import calcium citrate from foreign countries better to utilize the excess capacity of their own plants.

Production of essential oils was still flourishing at the outbreak of the war, but extraction methods were most primitive for all essences except bergamot.

Vegetables for direct consumption are produced in Sicily under most favorable conditions, because they can reach the North European markets far ahead of competing products. In addition, tomatoes supply the raw material for important processing industries, which produce sauce, canned tomatoes, and dried tomatoes. Vegetable production assumes especial importance on the plain of Catania and in the suburbs of Palermo (Conca d'Oro).

Equally favorable is the position of Sicily with regard to fresh deciduous fruits (peaches, apricots, cherries), but the grading and standardization of products are still unsatisfactory.

The table grapes of Sicily have long been in great demand in Italian and foreign markets. Sicilian wines are characterized by a high alcoholic content (12 to 13 percent) and as such are not too popular in Italy. Attempts to increase consumption of such wines as the Corvo, the Casteldaccia, etc., have failed, so that the bulk of the production is diverted to the manufacture of Marsala. This is a fortified wine made from native must, alcohol, and grape juices. Production is industrialized, with a few firms having a monopolistic position.

By and large the enterprises of the coastal fringe are heavily dependent upon a few commodities. Physical output in turn is greatly affected by drought, pests, and climatic conditions at large. Returns are obviously affected by conditions on the world market. While consumption of fruits and vegetables increased the world over, Sicily was faced with the increasing competition of Palestine, Spain, North Africa, California, and Florida. In all these areas the production of citrus and vegetables was based upon large-scale enterprises as compared with the small-production units that were, and still are, prevalent in Sicily. Although the need for production control was evident, the Government merely regulated exports (essentially with regard to quality, packing, etc.) and made timid attempts to increase consumption (by granting lower rates for small shipments by parcel post, *pacco agrumario*). The *Camera Agrumaria*, although well equipped to deal with technical problems, was not in a position to administer agricultural policies.

Thus the outbreak of the war found the citrus enterprises in a not-too-sound financial position, whereas the fruit and vegetable undertakings fared somewhat better.

THE LIVESTOCK INDUSTRY

From the standpoint of animal husbandry Sicily is essentially a Mediterranean country. The smaller, hardier species (sheep and goats) predominate. Equine animals surpass cattle and swine in numbers and importance.

Sicily lacks suitable environment for livestock production. Pastures are extremely poor and meager, so that from 6 to 8 hectares (15 to 20 acres) are needed to support one head of cattle (6, p. 811). Meadows have been expanded in recent years, but fodder output is greatly affected by climatic conditions. On the whole the domestic supply of roughage amounted to 4.1 quintals (904 pounds) per head of livestock so that the island had to import fodder from Central and Northern Italy. Feed grains (such as corn and barley) have little importance, and human consumption is forever competing with animal feeding with regard to pulses.

In the recent past, improvement of animal husbandry in the island was held to depend upon the introduction of highly productive legume crops, such as alfalfa and *ladino* clover (the well-known giant variety of white clover that is the mainstay of the Lombard dairy industry). These legumes, lasting several years, were expected to lengthen the rotation and increase grain yields.

Later it was realized that the climate of Sicily seldom allows the establishment of good legume meadows. In particular, when legumes are sown in the wheat, the summer heat destroys the meadow soon after the wheat is harvested.

Expansion of feed production is now generally believed to depend upon special practices: (1) Establishment of meadows *per se;* that is, with deep plowing and abundant fertilization, after which alfalfa can be sown in rows, together with oats, thus yielding a first cutting of small grain and grass; (2) planting of cover-crops (*erbai*) in the fall and winter, especially vetch, berseem, rape, oats, and mustard; (3) introduction of new species of legumes (*crotularia* and *kudzu*). (See tables 6 and 7.)

TABLE 6.—*Sicily: Types of cover crops, seasons, seed required, and yield*

TYPE	PLANTING TIME	HARVESTING TIME	SEED		YIELD		REMARKS
			PER HECTARE	PER ACRE	PER HECTARE	PER ACRE	
			Kilograms	*Pounds*	*Quintals*	*Short tons*	
Spring crops:							
Vetch	December	April	[1]140-160	[2]1.6-1.8	250	11	Planted with oats
Horse beans	November	March	[1]150	[2]1.7	400	18	Planted with oats
Crimson clover	September	April-May	20-25	17.8-22.3	250	11	Acid soils
Berseem	September	Feb.-May	30-35	26.8-31.2	300	13	Sandy soils; yields 2 cuttings
Barley	September	February	[1]250-350	[2]2.9-4.0	150	7	
Oats	September	April	[1]225	[2]2.6	250	11	
Rye	September	January	75	156	120	5	
Fall crops:							
Corn	July	September	[1]150-200	[2]1.7-2.3	200	9	
Sudan grass	April	June-Sept.	16-20	14-18	400	18	Three cuttings
		October					
Winter crops:							
Colza	September	December	10-15	9-13	80-100	4	
Fodder beets	September	March	4-7	3.6-6.2	300	13	
Rape	September	March	3-5	2.7-4.4	225	10	
Kohlrabi	September	March	6-7	5.3-6.2	250	11	

[1] Liters. [2] Bushels. Compiled from official sources.

TABLE 7.—*Sicily: Types of legume meadows and their utilization*

TYPE	SOIL	GRAZING TIME	CUTTING TIME	YIELD		DURATION	REMARKS
				PER HECTARE	PER ACRE		
				Quintals	*Short tons*		
Sulla	Heavy, clay soil	Winter	May	[1]400	17.8	2-3 years	
				[2]200	8.9		
Alfalfa	Slightly alkaline soils	Winter (except in the first year)	May June November	100 (hay)	4.4	3-6 years	To be planted as a hoe crop
Sainfoin	Light soils	May to August Nov. to Feb.	April-May November	[1]400 [2]200	17.8 8.9	2 years	

[1] First year. [2] Second year. Compiled from official sources.

A further necessity is to provide for the stabilization of supplies of feeding stuffs. Sicilian farms need a silo that can be used for all sorts of feeds, whether succulent or partially wilted, high in carbohydrate content, or mostly leguminous. For this reason small pit silos of the Teschnitz type [air-tight, with drainage facilities for the making of A.I.V. ensilage] are recommended (2, p. 237).

Animal-husbandry practices are also primitive. Castration of calves is the exception rather than the rule, heifers are bred after the third year, and cows are sent to the block long after they have surpassed the age of maximum productivity. Cattle are not provided with adequate shelter, and watering facilities are poor. Equine animals fare little better, and sheep and goats are kept in the open the year round. Sicilian flocks and herds also suffer from inadequacy of care. The pattern of settlement is such that barns are very distant from homesteads. Donkeys and hogs, which find shelter in the inhabited centers, lack convenient quarters.

Horses. Sicilian horses are of the Arabian type with some influence of Spanish and native Italian breeds. Arabian and English saddle horses are raised in the Provinces of Catania and Ragusa, and heavier animals are raised in the Province of Messina. Most herds are small or very small, colts being kept in stables in the East and allowed to roam on pastures in the West. The Italian Government kept registered stallions in Sicily, whose services were available free of charge. The State had first claim upon the offspring and paid premiums to the breeders.

Mules, Hinnies, and Asses. The lesser equine animals comprise over 90 percent of the total equine population of Sicily. Their importance in the agricultural economy of the island accrues from the fact that they can be used as pack and saddle animals as well as for such farm operations as plowing and threshing.

Mule production in particular may well rank among the important agricultural enterprises of Sicily. Sales to the Army alone averaged over 100 million lire annually in the pre-war period, and the island's production represented 45 percent of the total for the Kingdom.

Sicilian mules belong to two main types: (1) The artillery mule, which is raised at Valledolmo, Alia Lercara, and Castronovo in the Province of Palermo as well as at Naro-Canicatti in the Province of Agrigento, is an animal of large size (1.56 meters or 60 inches in height), great strength and hardiness; (2) the farm mule, of smaller size and equal hardiness, is raised in the Provinces of Trapani and Catania.

Sicilian jacks are of mixed breed, with strains of the Catalonian, Martina Franca, and Pantelleria bloods. Attempts have been made to improve the sires by selection and by special regulation of service stations. The State maintained 150 jacks in public stations, while approved jacks in private stations numbered 247. Small operators, however, often availed themselves of the services of unimproved jacks.

The low quality of dams is the main weakness of Sicilian mule production. While France developed special types of mares (Poitou), Sicilian breeders were reluctant to breed good mares to jacks because of their belief that once a mare is bred to a jack, all her offspring would present mulish features.[5]

On the other hand, the 22,000 mares used for mule production are not altogether suited for the breeding of large-sized, hardy offspring. The Government attempted to establish special breeding stations (Casteltermini, Sambuca, Mistretta, San Fratello,

[5] Students of animal breeding and genetics will recognize this superstition as a mere popular expression of the pseudo-scientific theory of telegony, which had a brief resurgence during the nineteenth century in connection with the *E. quagga* - *E. caballus* hybrids of Lord Morton.

etc.) with a total of 625 mares. Obviously this number is far too small in comparison with the total mule production.

Sicilian mule-raising practices are in great need of improvement. Most mules are raised on small holdings, mule herds seldom exceeding 30 in number even on latifundia. Colts are sold at 6 to 12 months of age and then raised by merchants until they reach the age of 36 or 40 months. Colts are ill-fed, supplements of minerals and proteins being especially inadequate. Often the young animals are put to work at too early an age and hitched to the plow with irrational yokes.

Ass breeding was based upon the special program for the selection and registration of Ragusa's asses. This program was organized with ass-books of American types.

Ass breeding benefited from the expansion of mule production, because government programs led to the raising of better jacks and better dams. The distribution of jacks and jennies is, however, so irregular that the latter are often bred to horses rather than to jacks. The offspring (hinny) is in little demand among Sicilian farmers who claim that the hinnies have all of the defects and none of the good qualities of the mule.[6]

Cattle. In proportion to its area Sicily has fewer cattle than any other region of Italy except Puglia and Lucania. The composition of the cattle population as revealed by census data with regard to age is unique: (1) Calves under 12 months of age comprise one-third of the total population. This in part is due to the time of the year at which the census was taken (March), which follows the calving time (winter). In part also the large number of calves is due to the practice of sending animals to the block only at 12 months of age or later. (2) Bulls and bull calves amount to 7.7 percent of the total. This extremely high proportion of sires and potential sires is connected with the well-known reluctance of Sicilian breeders to castrate farm animals and the practice of keeping animals on the range with little use of breeding stations. (3) Heifers are only 8.3 percent of the total population, which is further evidence of the slow turnover of herds. (4) Oxen and bullocks represent only 7.5 percent of the total cattle population. This is remarkable as an indication of a shortage of draft animals, which must be the cause of much inefficiency in farm operations. Sicily has only .5 head of oxen per square kilometer of agricultural land as compared with 5 head in Lombardy, 6.2 head in Veneto and Emilia, the very regions where tractors and horses are widely used on farms. Sicily instead has little machinery and a number of oxen are used for draft in urban centers.

Cattle breeds. *Brown-Swiss* and *Holstein* cattle are raised in the outskirts of the main urban centers, especially Messina, Catania, and Palermo. *Gray* cattle from Calabria are found near the Strait of Messina. Cows are raised for milk production, and oxen are used in Messina to move heavy loads.

The most important breed is the multiple-purpose, native Sicilian cattle of which two main types are recognized: The *Modicano*, raised in the Provinces of Agrigento and Ragusa, and the hill and mountain type. These differ mostly with regard to milk yield and gains in weight. Sicilian cattle are red in color, have a long head and an ungainly body. They are poor work animals, weighing slightly over 40 kilograms (88 pounds) at birth and reaching 450 kilograms (992 pounds) at 3 years of age. Net yields in meat are about 47 percent of the live weight. Milk production is variously

[6] Astonishing as this theory may be, in the absence of any information pertaining to sex-linked factors in the equine hybrids, it is still accepted and discussed in great detail in Italian textbooks of animal breeding. Compare, for instance, with R. Renzo Giuliani *Lezioni di Genetica Animale.* Florence. 1937.

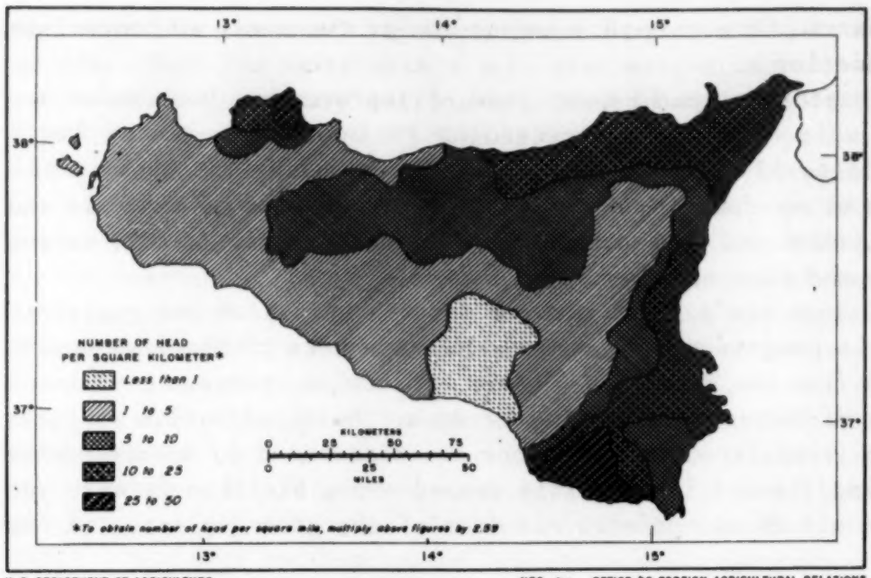

FIGURE 6.—Cattle distribution in Sicily.

reported at over 30 liters (8 gallons) per day for the Modicano type and 27 liters (7 gallons) for the mountain cattle. Official data indicate, however, an average production of 19.7 liters (5.2 gallons) in the Province of Ragusa and of 14.4 (3.8) for the whole island. The lactation period is very short, ranging from 6 months for the Modicano to 4 months for the mountain cows.

Crossbreeds: As is the case for many breeds of Mediterranean cattle, crosses between Sicilian and Brown-Swiss cattle are rather successful, because the crossbreeds maintain the favorable features of the Brown-Swiss together with some of the hardiness of native cattle. Crossbred calves gain weight more rapidly than the Sicilian ones and for this reason are preferred by commercial feeders.

Several types of crossbreeds are also found around Barcellona and Mistretta, where cattle imported from Sardinia and from the mainland are fattened with grain and byproducts of the citrus-processing industry.

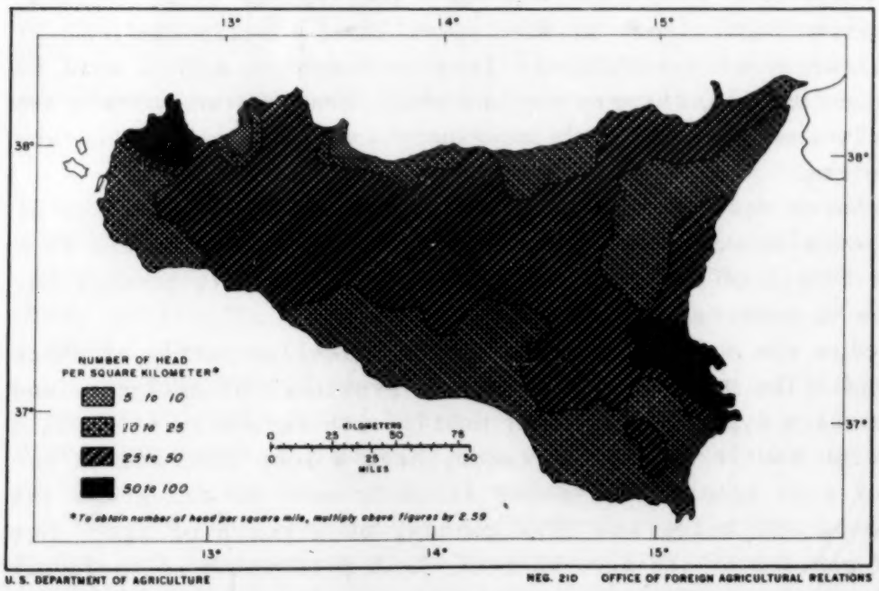

FIGURE 7.—Sheep distribution in Sicily.

Sheep. The sheep enterprise is essentially connected with the latifundistic economy, most animals being raised in rather large flocks. The enterprise is partly permanent and partly migratory. Although flock migrations in Sicily do not assume the importance they have in Puglia, the island, too, has the network of pasture-roads that characterizes Southern Italy (Sicilian: *trazzere*).

The tendency of Italian sheep breeders to develop multiple-purpose animals is particularly evident in Sicily, where sheep are kept for wool, meat, and milk.

One writer states (7): "The multiple-purpose sheep is always the most profitable one, especially when the aptitude for milk production is well-developed." Consequently, breed improvement is most difficult, and breeding practices necessarily remain in a primitive stage.

Most of the sheep of Sicily belong to the native breed (*Siciliano*) with an average production of over 100 kilograms (220 pounds) of milk (20 kilograms or 44 pounds of fresh cheese) and 1.6 kilograms (3.5 pounds) of wool in grease, corresponding to .8 kilogram (1.8 pounds) of washed wool. Attempts have been made to introduce the *Gentile di Puglia* breed, which has a lower production of milk (60-70 kilograms or 132-154 pounds) and higher production of wool (ewes produce 2 to 3.2 kilograms or 4 to 7 pounds of wool in grease).

Crossings of native sheep with Karakuls have proved most successful. Sicily has an excellent experiment station for sheep breeding located in Rocca Busambra.

Goats. Goats are raised in Sicily in large flocks that roam the mountains, especially around Messina. Milk goats comprise four-fifths of the total goat population, so that milk for direct human consumption is the main product. As elsewhere in Italy very little cheese is manufactured from goat milk.

Swine. Swine production is altogether negligible. Peasants raise one or two hogs for family consumption, mostly from native breeds. While in Southern Italy, native breeds have valuable features that have been further enhanced by introduction of English blood, the native swine of Sicily are inefficient converters of feed into fat and meat.

FIGURE 8. Sicilian sheep.

AGRICULTURAL POLICIES AND ACTION PROGRAMS

The apologists of the Fascist Regime both in Italy and abroad are wont to praise its agricultural policies and its public works programs. Indeed even among the opponents and critics of Fascism, the grandiose highways, the reclaimed marshes, the lofty buildings are considered no mean achievements.

With few exceptions, the literature on Fascist agricultural policies leads one to believe that every corner, every nook of rural Italy shows the beneficial effects of the wise, enlightened policies of a benevolent Caesar. Whatever judgment history may issue on Fascism, reclaimed marshes and flourishing villages are said to constitute a "*monumentum aere perennius.*"[7]

The real situation is quite different from the wonderful picture presented by Fascist sources and certain students of recent Italian policies. Whereas

[7] A monument more lasting than bronze.

enormous sums were invested in land reclamation, erosion control, and resettlement programs, the vested interests of the great landowners were respected with such jealous care that many programs became ineffective. While the Regime proclaimed its intention of sparing no effort to increase agricultural production and the productivity of soil, such policy was carried on only if it did not interfere with the interests of the landed proprietors.

In the rural areas, Fascism was originally a movement to protect the landowners against the claims of agricultural labor and as such received both direct and indirect support from the landlords.[8] In later years, the allegiance to the landed interests was maintained.[9]

Obviously, under such circumstances, great limitations were placed upon the scope of action programs. Where rural distress accrued from institutional causes, no policy could bring adequate relief as long as the landed interests were taboo.

Sicily is an excellent case in point. Between 1922 and 1938 the Government undertook erosion control works, affecting an area of 927,402 hectares (2,291,610 acres); completed main reclamation works affecting 89,606 hectares (221,416 acres) and had 123,667 hectares (305,581 acres) under reclamation; provided for the irrigation of 29,964 hectares (74,041 acres); reconditioned 15,555 hectares (38,436 acres) of waste land; built 2,539 farm houses, 10,818 livestock shelters, 2,040 sundry farm buildings, 15.8 kilometers (9.8 miles) of rural aqueducts, 363 kilometers (226 miles) of farm roads; spent a total of 531.4 million lire ($27,954,000[10]) for the works listed above; and financed with low-interest loans an equally imposing array of works undertaken by private individuals.

Yet in January 1940, the selfsame sponsor and champion of land reclamation, Senator Serpieri, stated that the fundamental structure (of the latifundium) is still the same (feudalistic); the relation between the cultivator and the soil has remained in a most sharp contrast with what Fascism wants for reasons of civilization, dignity, and social justice (*9*, pp. 4-5).

Thus 11 years after the law for comprehensive reclamation, 16 years after the land reform had been promised to the peoples of Sicily, the decision to colonize the latifundium (July 20, 1939) could still be deemed (*8*, p. 660) "an event that shall remain among the fateful dates of the history of Italy."

Inasmuch as the program was actually started and to a certain extent continued during the war, the legislation for the colonization of the latifundia must be analyzed here.

The law of 1940[11] states that "the landowners of those areas of Sicily that have a latifundistic economy must colonize their estates by creating family-size units and by settling the farm families on the holding, according to the directives issued by the Ministry of Agriculture.

"They must further provide for competent management of the estates and adopt those stable labor relations that might further the improvement of the land and insure adequate rewards to the cultivators."

[8] For instance the Agrarian Party joined the Fascists in 1923.

[9] "[Our Regime] believes in the fundamental importance of private ownership in land not only of peasant ownership but also of bourgeois and capitalistic landlordism, for the welfare of the Nation," stated Arrigo Serpieri in *Problems of Colonisation*, Florence, 1933. See page 8.

[10] At the average rate of exchange for 1938 (1 lira equals 5.2605 cents).

[11] For the full text of the law with the *glossae* and comments of the Fascist Confederation of Agriculturists, see *Bonifica e Colonizzazione*. 4: 127-141. Rome. 1940.

The necessary works of land reclamation are to be paid by the State, whereas improvement works will be subsidized up to 50 percent of the cost. A special agency (*Ente di Colonizzazione del Latifondo Siciliano*) is given the task of providing technical and financial assistance to the landlords. If, in the opinion of the *Ente*, the landowners do not cooperate adequately in the land-reclamation programs, they may be expropriated.[12]

The landlord is granted the right to decide how the colonization should be accomplished; namely, he may undertake the work himself, receiving both subsidies and loans from the State (which in turn will provide the main land-reclamation works), or he may transfer the possession of the holding to the *Ente*. The *Ente* operates the estate and pays the landlord a rent equal to the average net returns for the previous 5 years. Upon completion of the colonization, possession of the estate reverts to the landlord, who is then required to reimburse the *Ente* for the share of the expenditures that is not to be charged to the State. If the landlord is unable or not willing to pay the *Ente*, he may fulfill his obligation by giving the *Ente* full property title on some of the land.

Land that has been either expropriated or transferred in property to the *Ente* shall be broken down into peasant holdings for the purpose of establishing small owner-operated farms. The holdings will be transferred to cultivators on a long-time payment plan. A significant point is that, while the law sets forth in great detail the procedures of colonization, the provisions directed toward the establishment of peasant-owned holdings are vague and undetermined.[13] Such vagueness can not be held as merely accidental. The same feature has been noticed in the Agro Pontino, in the Lower Friuli and in the Agro Romano.[14] Peasant ownership had the double function of lure or mirage for the disadvantaged rural groups[15] and of threat for recalcitrant landlords. Where large-size holdings existed prior to the colonization, peasant ownership is only a secondary product of the Government programs.

Patterns of settlement and land utilization are to be changed, but the pattern of landownership shall remain the same. Thus the Fascist policy may provide for a degree of agricultural reform, but land reform in the Irish or Mexican sense accrues only in exceptional cases.

From the standpoint of the United Nations, Sicily is now in an evolutionary stage that poses most serious problems of policy. The static approach (maintenance of law and order) is meaningless when the occupation authorities have to deal with dynamic programs. Upon completion of the military operations, the position of United Nations officials with regard to the colonization of the latifundia must be defined. If the program is interrupted, while the *Ente* is allowed to continue the operation of the estates that were in its possession at the time of occupation, the United Nations will be held to side with the more conservative landlords. If the program is continued, the United Nations will appear as endorsing a none-too-desirable policy of preserving

[12] The Report to the Senate (9) emphasizes that this provision is conceived "with due respect to the institution of private property." The compensation provided for by Italian laws on expropriation of real estate is determined by capitalizing landlord returns at the rate of 5.5 percent.

[13] "Rules for the formation of peasant-owned holdings are not given." See reference cited in footnote 11, p. 139.

[14] "Provisions regulating the transfer of holdings to cultivators lack precision, clarity, and thoroughness." SULLAM, VITTORIO. RAPPORTI FRA IMPRESA E MANO D'OPERA IN ALCUNE ZONE DI BONIFICA DELL'ITALIA SETTENTRIONALE E CENTRALE (Relations between labor and entrepreneur in areas of land reclamation of North and Central Italy). 754 pp. 1937 (Unpublished thesis Ph. D. Univ. Florence). See pages 39, 86, and 427.

[15] "The mere hope of achieving land ownership has a momentous effect upon the tiller of the soil," stated Arrigo Serpieri in *Contratti Agrari*, p. 42.

the *status quo* with regard to landownership. Expropriation of colonized holdings and transfer of titles in land to peasants may, in later years, be held illegal by Italian courts. Obviously neither suggestions nor recommendations may find their place here. Yet it should be said that problems of land tenure acquire such momentous importance in the whole of Italy, and particularly in Sicily, that they deserve full consideration on the part of policy-making bodies. The hope is that, whatever solution be adopted, it will harmoniously reconcile the welfare of the common man with the economic and political goals that belligerent nations must pursue in occupied countries.

SICILIAN AGRICULTURE AND THE WAR

Prior to the occupation, Italy's status of belligerency brought about only a few significant changes in the agricultural economy of Sicily. In the field of production - and as a phase of the general movement for intensification of exploitation and expansion of output - the area planted in cotton and pulses was increased, to the detriment of the fallow. Supplies of raw materials seem to have been maintained at pre-war levels, with the exception of fuel and copper-containing fungicides. Heavy subsidies were paid to all agricultural producers, raising the level of farm prices to a point one-third above the retail prices of foodstuffs and other finished products. In addition cash bonuses were granted to all wheat growers.

In the field of marketing and distribution compulsory pools were established for all nonperishable commodities as well as for many byproducts of farm industries (olive residues, grape dregs, etc.). Requisitions of livestock need not have depleted the herds and flocks of the island, except with regard to mules and horses of which Sicily may have had to contribute to the Army more than its normal pre-war share.

Producers of foodstuffs were allowed to retain small portions of their produce for home consumption and for seed. Furthermore part of the produce from cover crops (beans and small grains) could be fed to livestock.

There is plentiful evidence that the strict regulations concerning marketing and distribution were rarely enforced. By and large, the nonfarming population appear to have suffered much hardship, whereas the agricultural producers fared much better. The wheat growers benefited from higher prices and subsidies, and the producers of fruits and vegetables found satisfactory markets in Germany, Sweden, etc.

Conversely, military operations may have seriously interfered with farming. Harvesting of wheat has probably been disrupted in many parts of the island. Commandeering of draft animals by the Germans has probably made the threshing of wheat most difficult. Last but not least, damaging of power stations and power lines may have greatly curtailed the irrigation of citrus groves.

FOOD BALANCE AND DEGREE OF SELF-SUFFICIENCY OF SICILY

A precise determination of Sicily's trade in foodstuffs and consequently of its food balance is impossible, because the available data on export and import trade are incomplete. The Economic Observatory of the Bank of Sicily, in cooperation with the Railroad Compartment of Palermo and the Customs offices of the Island, has since 1924 collected data on trade between Sicily and foreign countries and, since 1926, also between Sicily and the mainland (*3*). Data have been collected for complete carloads. They do not include shipments by parcel post and by cars laden with miscellaneous material (10 percent of the total traffic by rail). The latter assumes especial importance in connection with importations from the rest of Italy.

TABLE 8.—*Production, trade, and disappearance of foodstuffs in Sicily, averages 1933-34 to 1936-37*

ITEM	PRODUCTION		NET TRADE[1]		DEDUCTIONS: SEED		DEDUCTIONS: OTHER[2]		DISAPPEARANCE	
	1,000 quintals	*1,000 bushels*	*1,000 quintals*	*1,000 bushels*	*1,000 quintals*	*1,000 bushels*	*1,000 quintals*	*1,000 bushels*	*1,000 quintals*	*1,000 bushels*
Wheat	9,162	33,664	+902	+3,314	1,127	4,141	-	-	8,937	32,837
Corn	38	149	+134	+528	1	4	95	374	76	299
Barley	627	2,880	-17	-78	72	331	533	2,448	5	23
Rye	11	43	-	-	2	8	1	4	8	31
Rice (rough)	6	29	+198	+970	(3)	(3)	(3)	(3)	204	999
Potatoes	346	1,271	+153	+562	46	169	125	459	328	1,205
		1,000 pounds		*1,000 pounds*		*1,000 pounds*		*1,000 pounds*		*1,000 pounds*
Sugar	-	-	+108	+23,810	-	-	-	-	108	23,810
Horse beans	2,347	517,420	-467	-102,955	181	39,903	1,034	227,956	665	146,606
Other dried legumes	181	39,903	+5	+1,102	19	4,189	18	3,968	149	32,848
Citrus fruit	5,622	1,239,426	[4]-4,446	-980,165	-	-	[5]711	[5]156,747	465	102,514
Other fresh fruit	830	182,982	-149	-32,849	-	-	-	-	681	150,133
Nuts and dried fruit	986	217,374	-504	-111,112	-	-	5	1,102	477	105,160
Tomatoes	1,023	225,531	-414	-91,270	-	-	-	-	609	134,261
Other vegetables	[6]1,498	330,249	-158	-34,833	-	-	-	-	[6]1,340	295,416
Wine	[6]2,842	[7]75,077	[6]-1,574	[7]-41,580	-	-	-	-	[6]1,268	[7] 33,497
Olive oil	262	57,760	-53	-11,684	-	-	-	-	209	46,076
Seed oil	16	3,527	+21	+4,630	-	-	-	-	37	8,157
Butter	(3)	(3)	(3)	(3)	-	-	-	-	(3)	(3)
Lard, slaughter fats	16	3,527	+4	+882	-	-	-	-	20	4,409
Beef and veal	87	19,180	+34	+7,496	-	-	-	-	121	26,676
Mutton and lamb	44	9,700	-	-	-	-	-	-	44	9,700
Pork	82	18,078	+3	+661	-	-	-	-	85	18,739
Other meats	20	4,409	-	-	-	-	-	-	20	4,409
Meat offals	21	4,630	-	-	-	-	-	-	21	4,630
Fresh milk	[8]1,034	[8]227,956	-	-	-	-	-	-	1,034	227,956
Cheese[9]	108	23,810	-6	-1,323	-	-	-	-	102	22,487
Coffee	-	-	+14	+3,086	-	-	-	-	14	3,086

[1] Net imports (+); net exports (-).
[2] "Others" include amounts fed, wasted on farm, and diverted to industrial uses.
[3] Less than 500.
[4] Exported as fresh fruit.
[5] Citric acid, juices. Includes net exports of such products.
[6] 1,000 hectoliters.
[7] 1,000 gallons.
[8] Cow and goat milk.
[9] Includes soft curd products.

Compiled from official sources. No allowance made for losses in distribution which for fruits and vegetables are considerable.

Moreover, data are not available for 1935, so that it is impossible to draw the food balance of the island for a comparable series of years. In the determination of the food balance of Sicily (see table 8), the procedures adopted are those suggested by Benedetto Barberi.

From the standpoint of volume, the trade in wheat and wheat products has extreme importance. Under normal conditions the island exchanged part of its durum wheat for soft wheat produced in Calabria and in other parts of the mainland.

With average production of wheat Sicily is on a deficit basis (90,000 metric tons or 99,208 short tons). With such bumper crops as the one harvested in 1938 (125 percent of the 1933-37 average), the island has a wheat surplus of 60,000 metric tons (66,139 short tons). Other food imports include corn (which, however, is mostly used for feed), rice, sugar, potatoes, and livestock. Crop fluctuations are also reflected in Sicily's position with regard to olive oil and beans. Net exports include citrus and deciduous fruits, nuts, vegetables, wine, and tomatoes.

Under the lower consumption levels that must be established in wartime, Sicily could either achieve or closely approach self-sufficiency with regard to staples. To this end, however, peasant hoarding, illegal consumption, black-market sales, all evils that plague Italy's wartime economy must be brought under control. Until transportation and distribution are reorganized, the urban population will be dependent upon outside sources for food supplies.

If adequate packing and shipping facilities are provided, Sicily's surpluses of citrus fruits and vegetables may greatly relieve England's distress with regard to protective foods. To the food balance of the United Nations, Sicily can contribute far more in terms of nutritionally important foodstuffs than its cities require for immediate relief or its farmers will need in terms of agricultural supplies.

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